**Modeling Dynamic Topics in Chain-Free Fashion by Evolution-Tracking**

**Contrastive Learning and Unassociated Word Exclusion**

**Goal**: to model the evolution of topics over time while avoiding two key limitations of previous dynamic topic models:

1. The generation of **repetitive topics** within the same time slice
2. The inclusion of **unassociated words** that do not belong to the temporal context (ex: covid in 2017)

**Contributions made by CFDTM:**

1. Evolution-Tracking Contrastive Learning (ETC) – positive relations between topics in the consecutive slices and negative in the same slice which tracks evolution. This way, topics in consecutive slices are closer in embedding space and topics in the same slice are pushed apart.
2. Unassociated Word Exclusion (UWE) – removes words that don’t belong in a time slice.

This model outperforms baselines that include BERTopic in both coherence and topic diversity, is robust to hyperparameters and number of topics and improves the results of tasks such as classification and clustering.